



**Marine Transportation System  
Research and Technology  
Coordination Conference**

# **MTS Port Capacity Problems: Real or Perceived ?**

**John Vickerman  
Principal  
TranSystems Corporation**



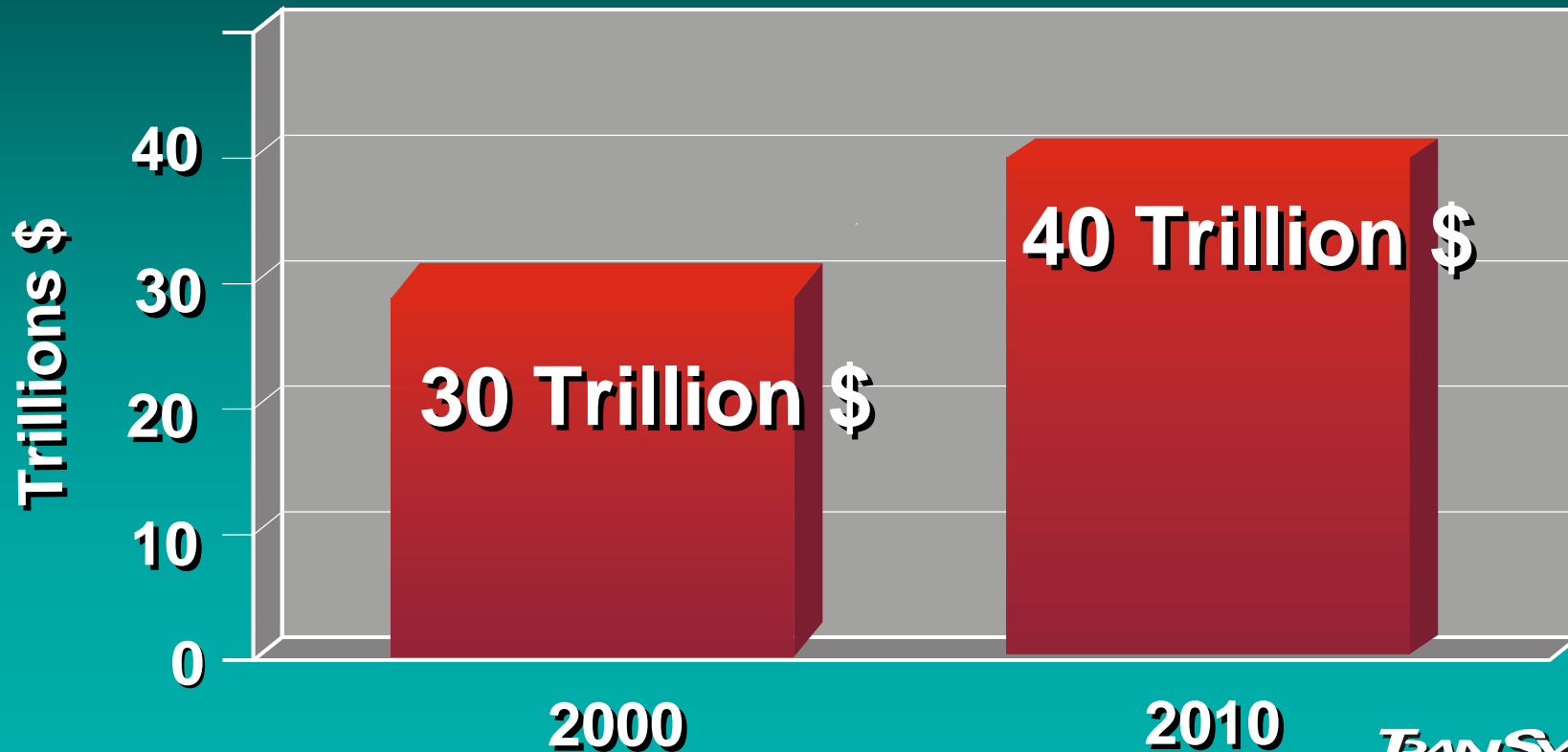
# **Can US Marine Terminals Accommodate the Future Freight Volumes ?...**



## World Bank's

# "Global Economic Prospects 2001"

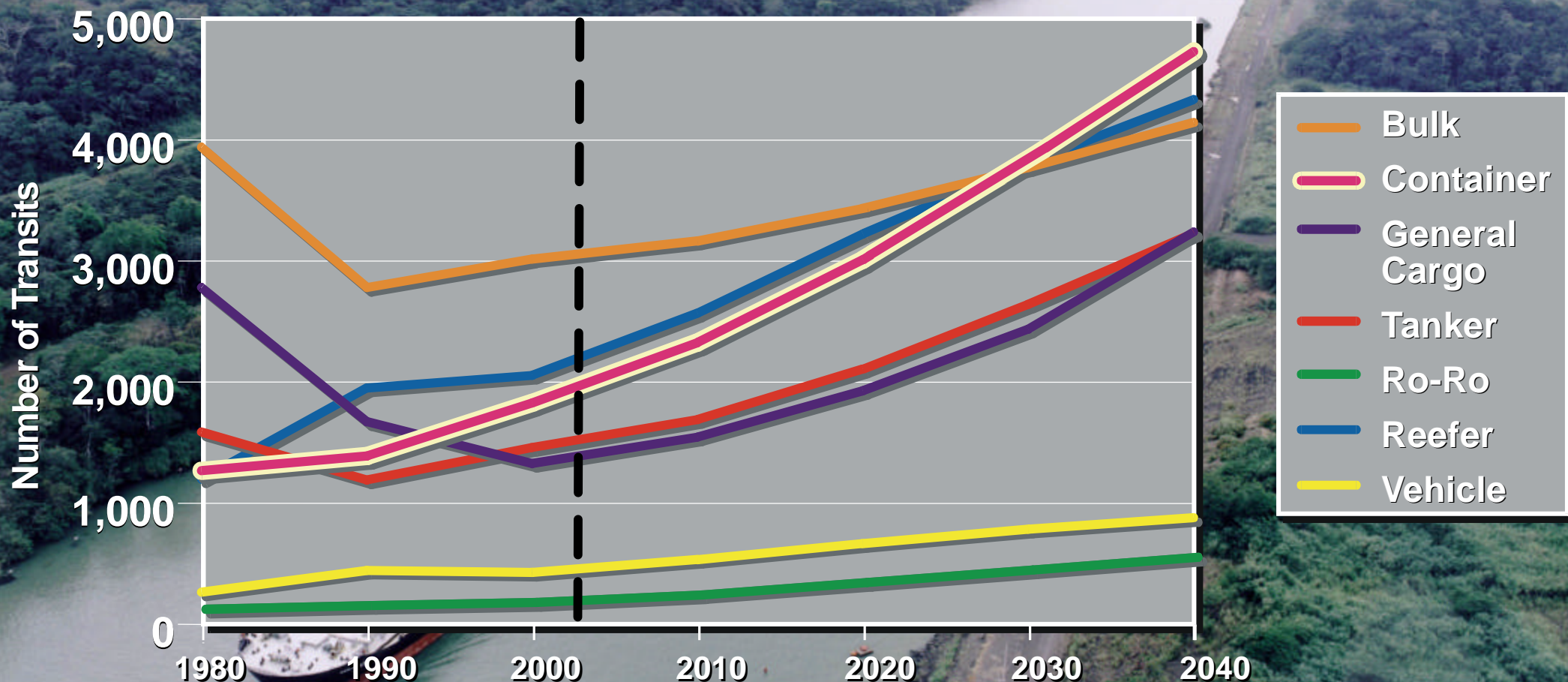
World Output will Increase 33% in 10 years





# Panama Canal Vessel Forecast Transits

**Container Ships Will Dominate Canal Transits**

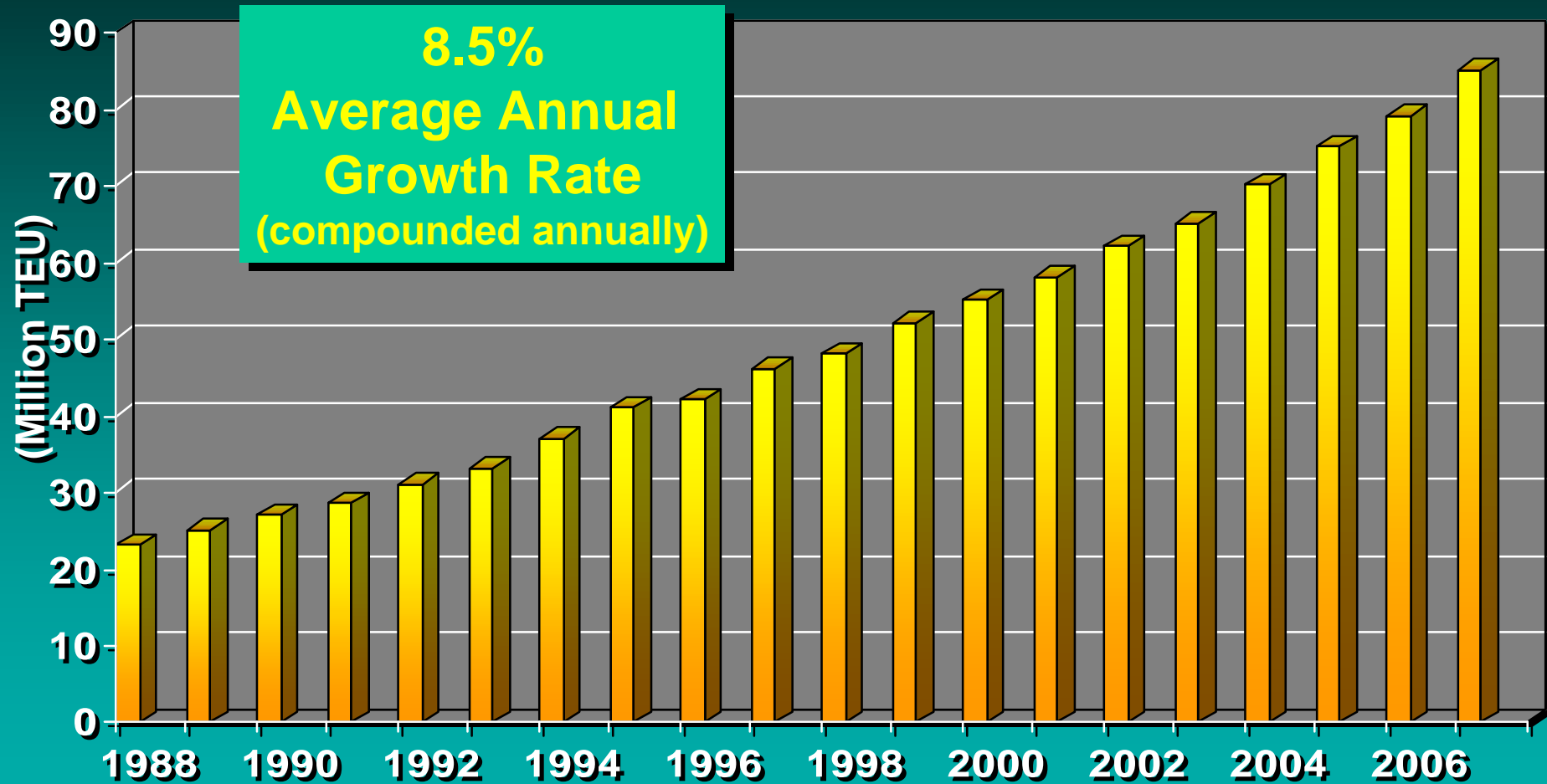


Source: Panama Canal Commission/ICF Kaiser, June 1997





# 20 Year Containerized World Trade Growth 1988 - 2007

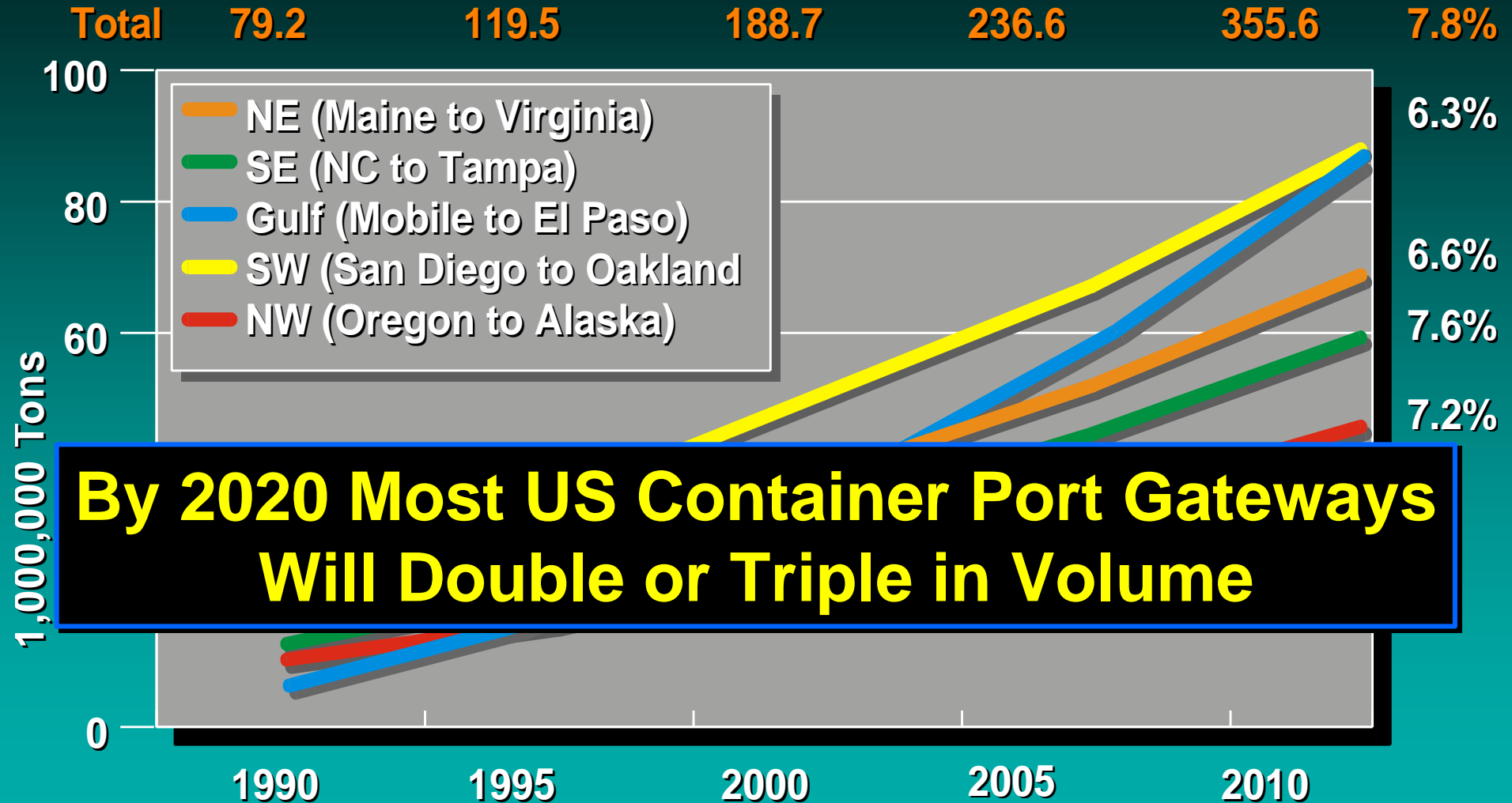


Source: Clarkson Research Studies and West LB Panmure



# U.S. Containerized Tonnage Forecast

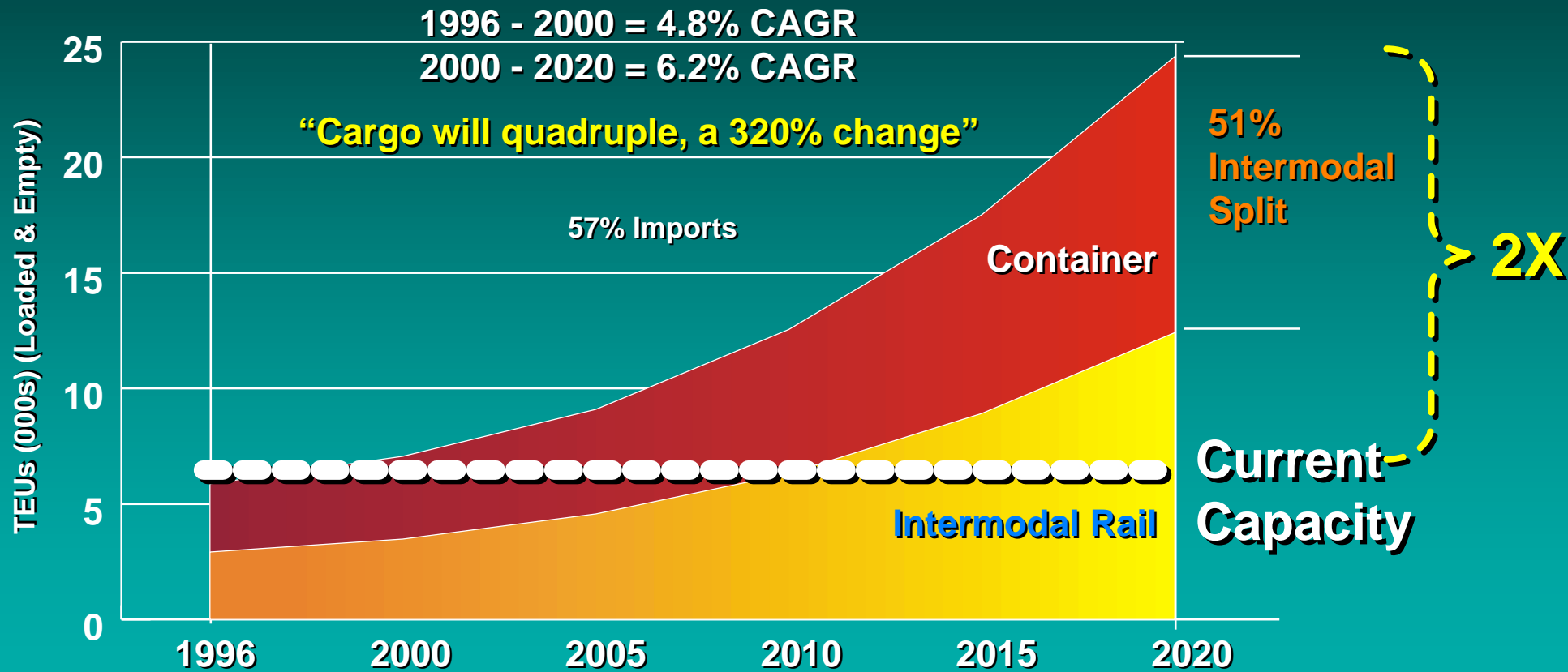
CAGR



Source: DRI/McGraw Hill



# Ports of Los Angeles and Long Beach Container and Intermodal 2020 Forecast (Worse Case: Asian Crisis Steady-State)





# San Pedro Bay Ports of Ports of Los Angeles and Long Beach Container Growth Implications:

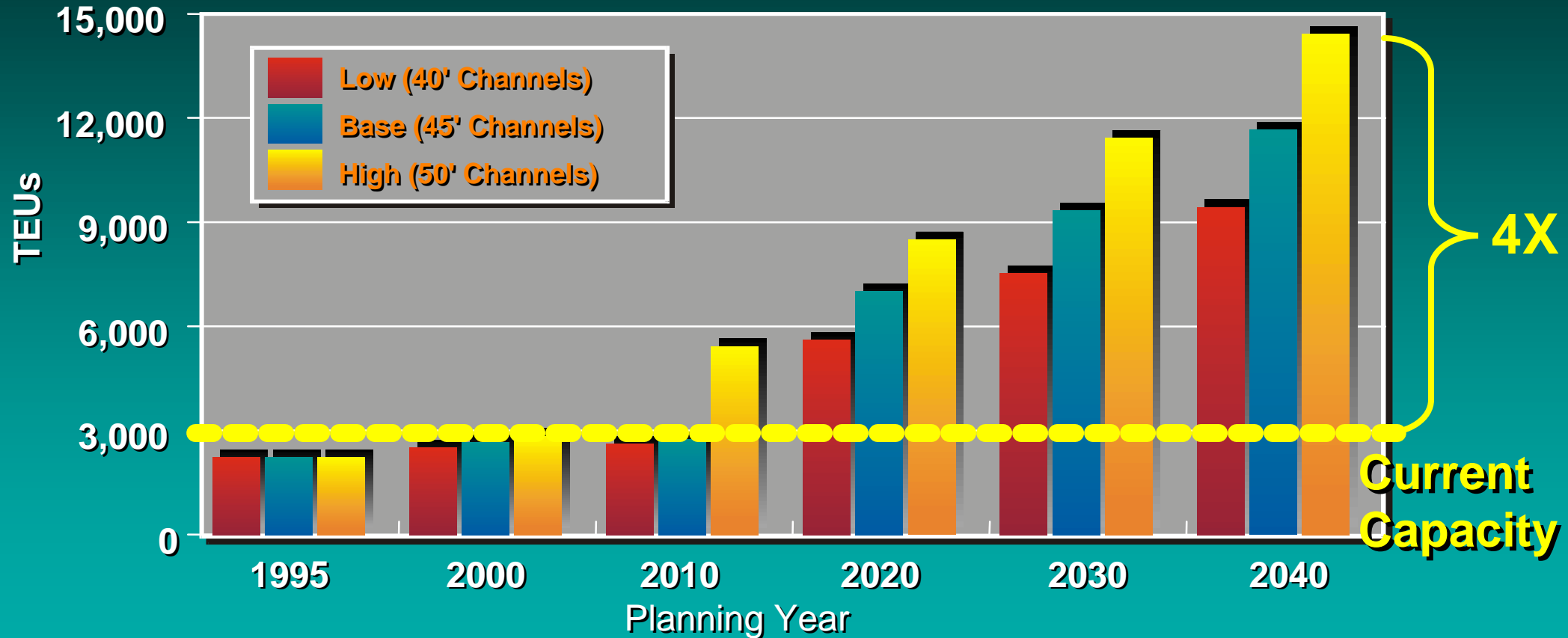
**“At current growth and per acre productivity, in 18 years the two Ports will require **3,624 new acres** of container terminal”\***

\* Source: Port of Long Beach





# NY/NJ Regional Container Forecast (TEUs)

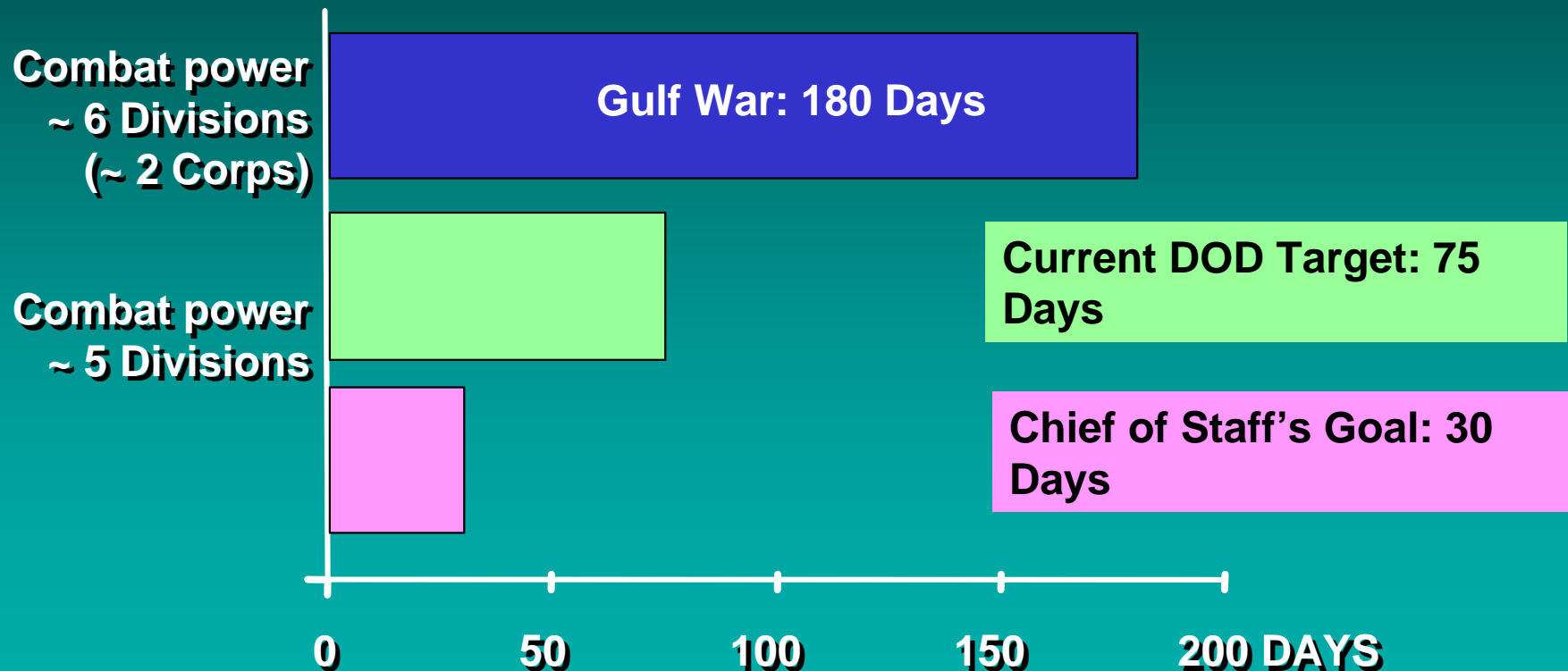


Source: PANY/NJ,



# The Army's Strategic Mobility Requirements

**(The Military's Goal is to Reduce Deployment Time by 80 Percent...Without Disrupting Commercial Ports)**



Source: Adapted from briefing by William Lucas, MTMC, to TRB Annual Meeting, Jan. '00



# **Can US Ports Handle the Continuing Growth of Container Vessels and Shoreside Demands ?**



# 2000 Alliance Vessel Capacity Growth

	# Carriers	Capacity on Order TEU	Vessel #
Grand Alliance			
HL / P&ONL / NYK / OOCL / MISC	5	255,806	50
Maersk Sea-Land*	1	104,200	22
New World Alliance		132,156	28
MOL / HMM / APL (incl. I)			
Cosco / K-Line / Yang Ming		158,370	38
United Alliance		44,150	9
Senator / Cho Yang / Hanjin / UASC	4		
* Includes SCL			
Total:		694,682	147

28% increase

# Despite Very Low Financial Return... Liner Industry Continues to Build Larger Vessels



## Recent Mega Container New Build Orders

China Shipping Group:	2 x 9800 TEUs	2004 Delivery
Orient Overseas Container Lines:	6 x 7500 TEUs	2003 Delivery
Hapag-Lloyd:	4 x 7200 TEUs	2003 Delivery
Malaysian International MISC:	4 x 7200 TEUs	2003 Delivery

## Current Shipyard Designs

8500 - 9000 TEU Jumbo: LOA: 1,083 ft x 149.6 ft x 47.6ft Draft  
150,000 DWT - 93,000 HP Engine



# Mega Container Vessels

1970 Industry Prediction:    “3,250 TEU”

## The Reality:

Regina Maersk                      6,000 TEU

Sovereign Maersk                6,600 TEU

21-Wide Planned                8,000 TEU

Near Term Possible:            10,000 – 15,000 TEU

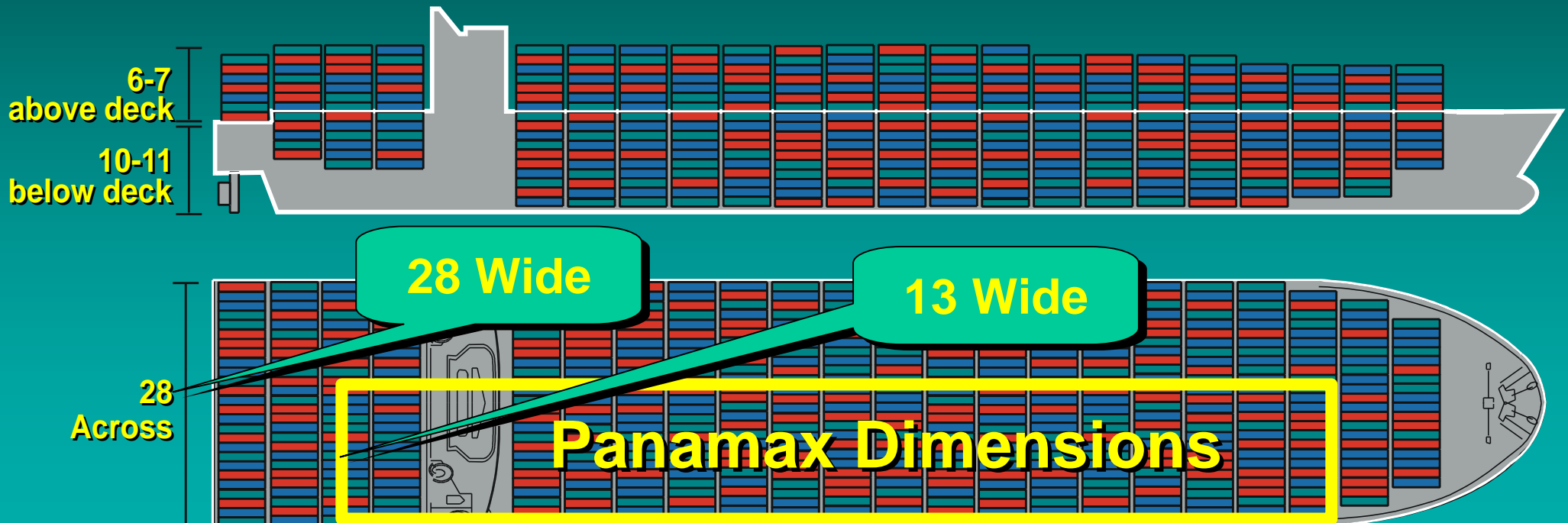


# The 15,000 TEU Containership

LOA. = 400 m (1,312 ft.)

Draft = 14 m (46 ft.)

BEAM = 69 m (226 ft.)





# A 10,000 TEU Mega-Container Vessel Can Produce High Intermodal Rail Volumes (One Weekly Vessel Call)

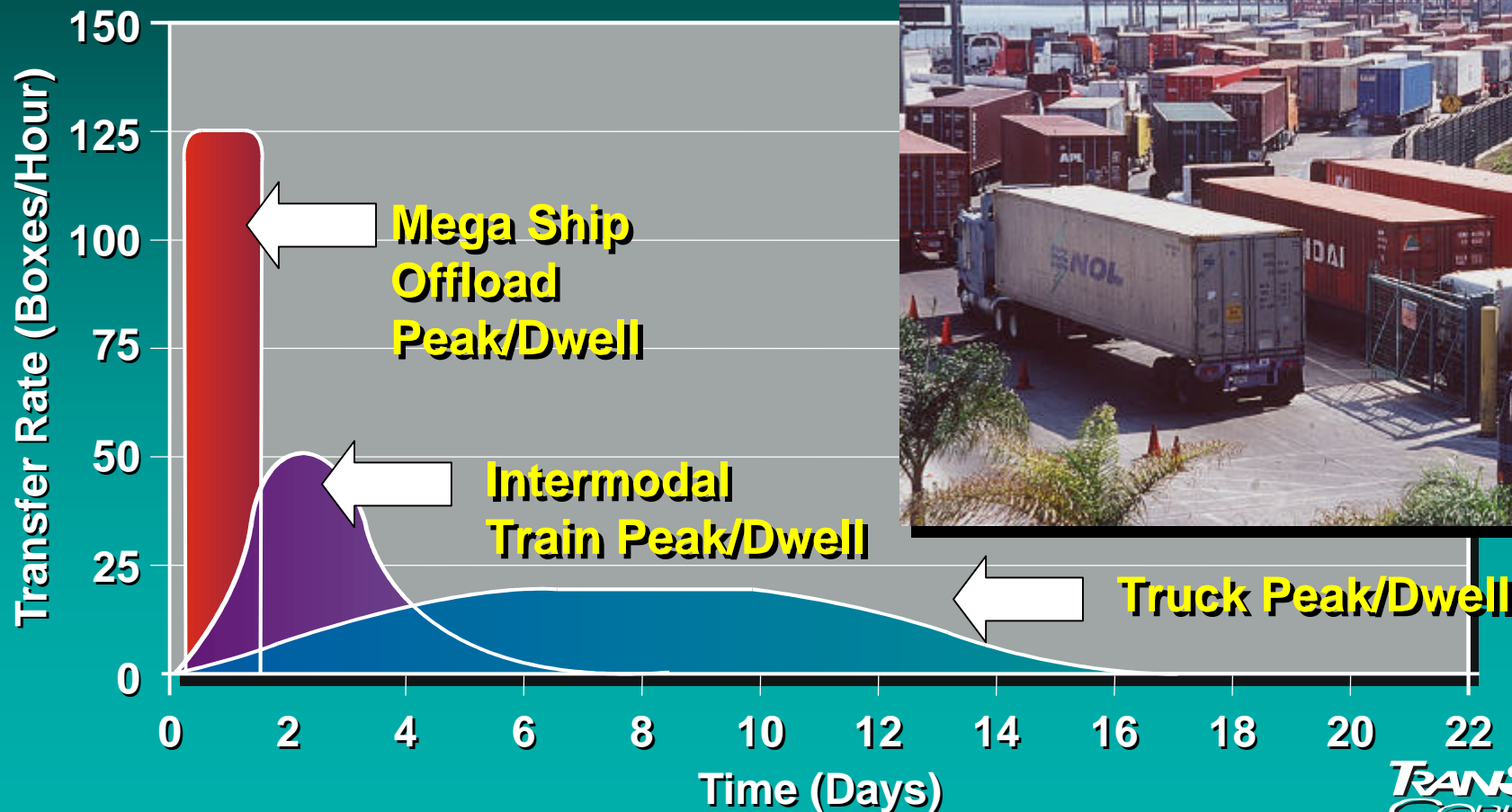


**13.4 Double Stacked Trains**

**75% Intermodal Split**



# Mega-Ship Terminal Wharf Apron & Container Gate Peaking Characteristics





# **Will Changing Cruise Vessel Requirements Change US Port Facilities ?**





# RCCL's Eagle Class Voyager of the Seas

- 142,000 GRT
- \$500 Million
- 3,840 Passengers
- 1,180 Crew
- AZIPOD Propulsion





# US Ports Propose Major Investments in Mega Cruise Facilities

(Port Everglades New \$500 Million Cruise Facilities to Accommodate a Peak of 75,000 Passengers)







# Emerging Mini Cruise Ship Market



**“Rivage St Martin”**  
Catamaran — \$25M  
246 ft long, 55.8 ft wide  
134 passengers / 50 crew



# **US Port Productivity... Globally Competitive or Not ?**



# **Late 90's U.S. Marine Terminal Average Productivity** (Throughput in TEUs per Acre)

**Asian Ports**

**8,834 TEUs/Acre/Year**

**European Ports**

**2,974 TEUs/Acre/Year**

**United States Ports**

**2,144 TEUs/Acre/Year**

**US West Coast Ports**

**3,567 TEUs/Acre/Year**

**US East Coast Ports**

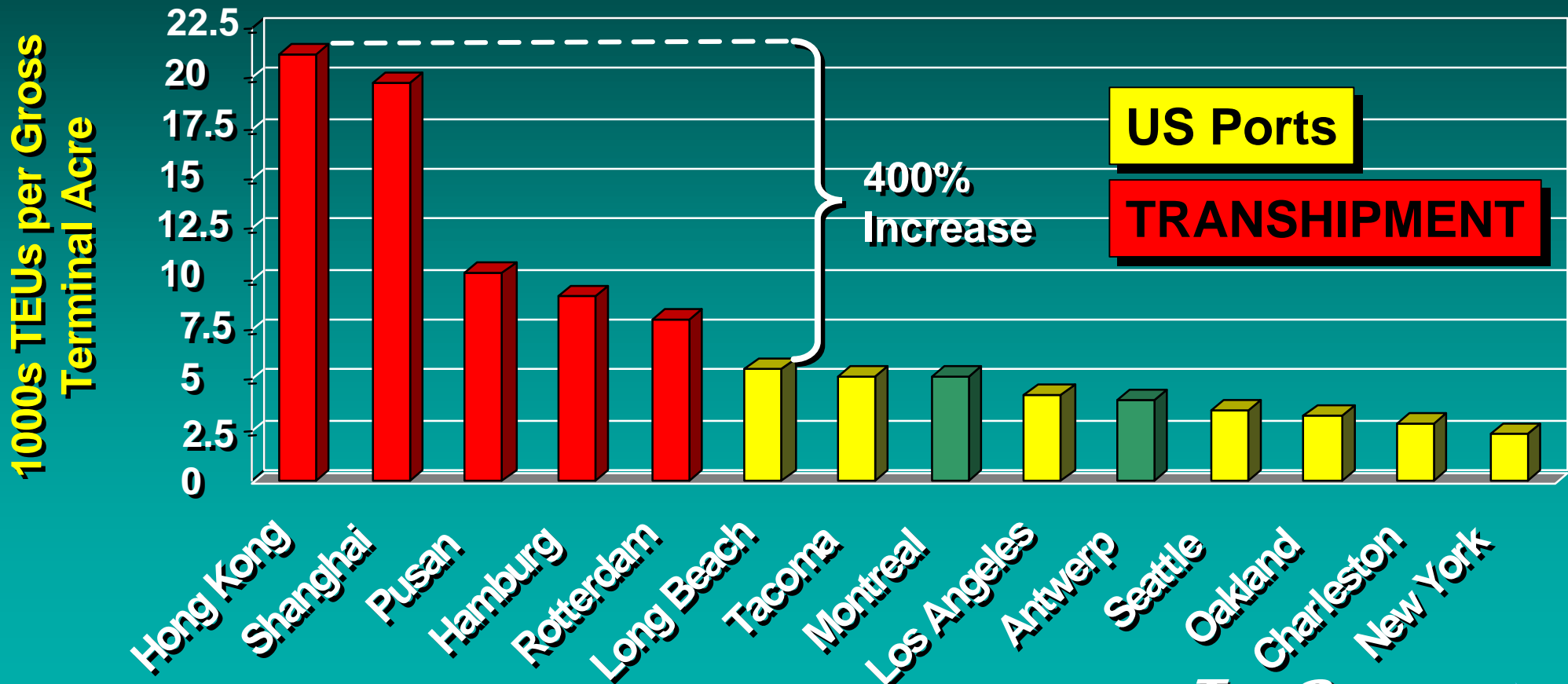
**1,281 TEUs/Acre/Year**





# 2000 World Container Terminal Productivity High Volume – “*With Significant Transhipment*”

Throughput per Gross Acre per Year



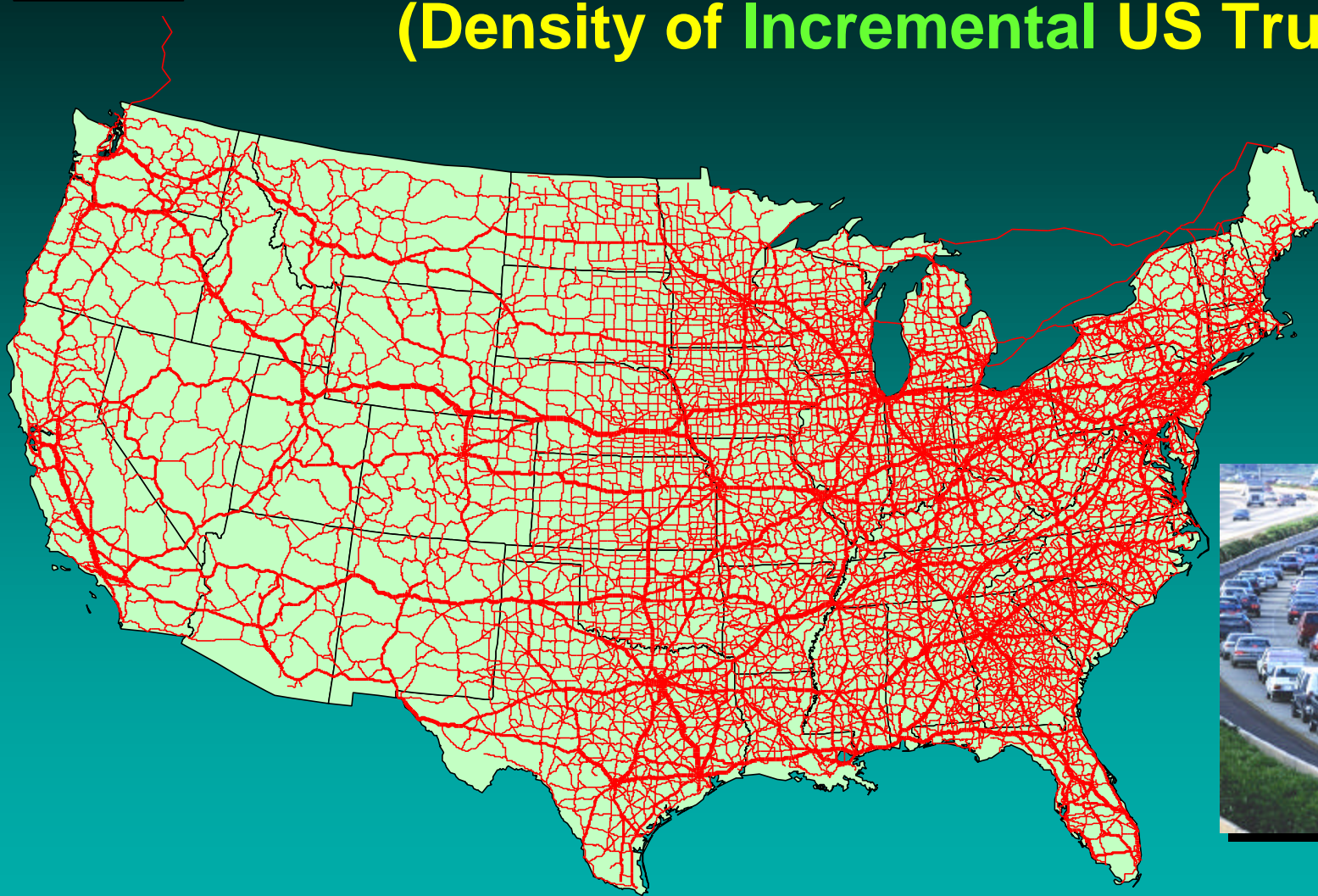
Source: Norbridge Consulting



# **Port Landside Access Demands Continue to Increase...**



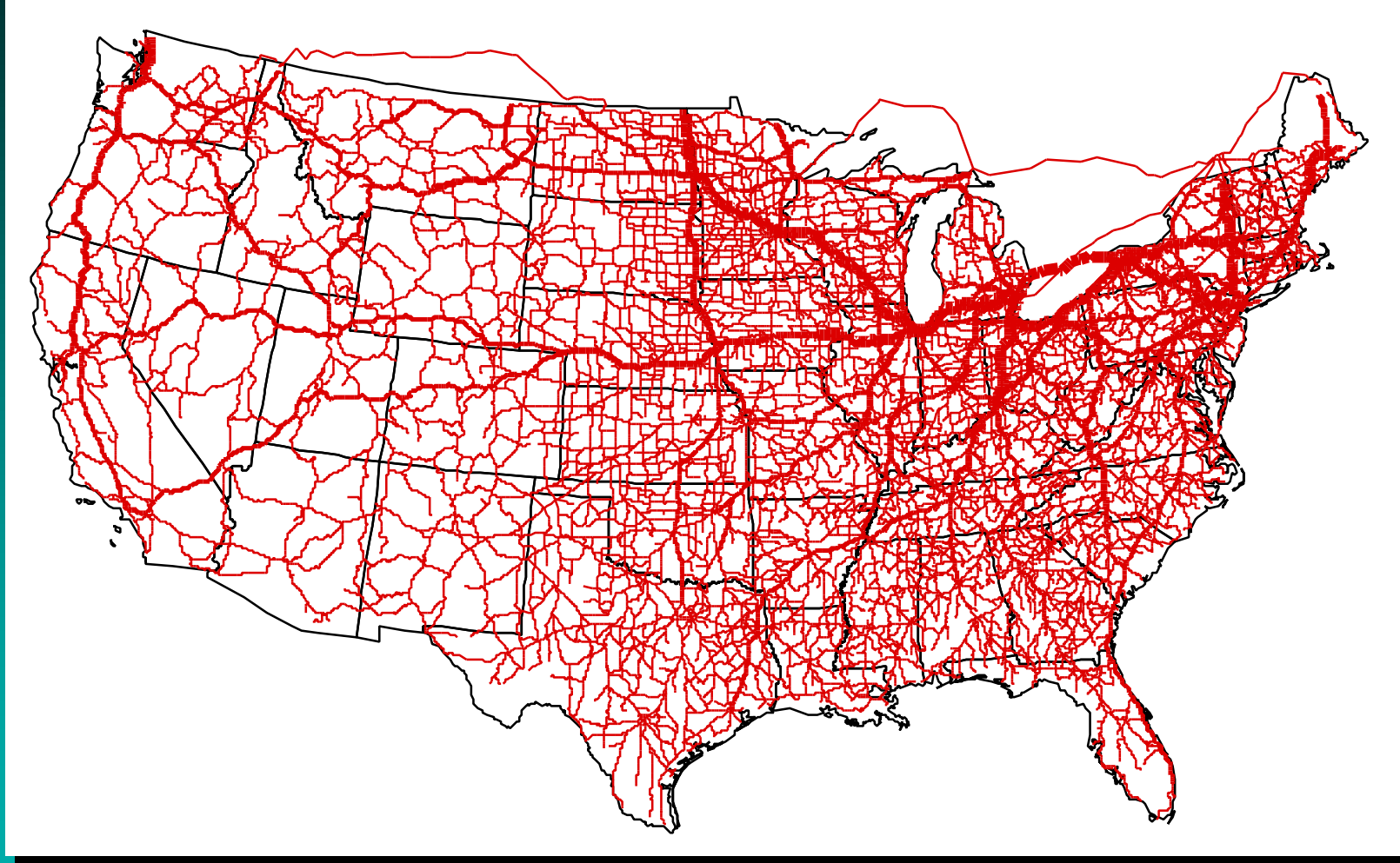
# 2020 Truck Traffic Growth on Highways (Density of Incremental US Truck Tons)



Source: USDOT FHWA Freight Analysis Framework



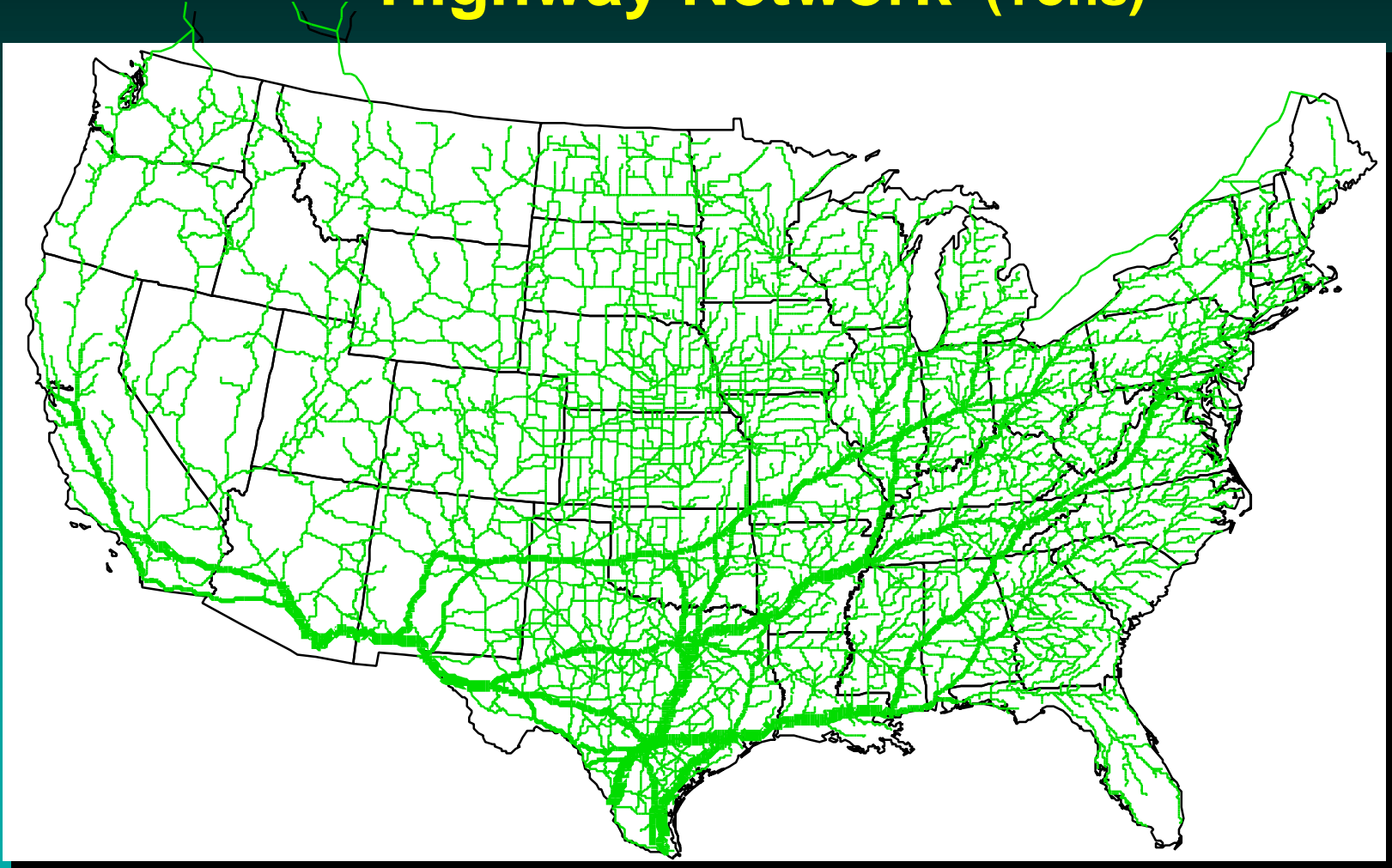
# 2020 NAFTA - US/Canada Truck Traffic US Highway Network (Tons)







# 2020 NAFTA - US/Mexico Truck Traffic US Highway Network (Tons)

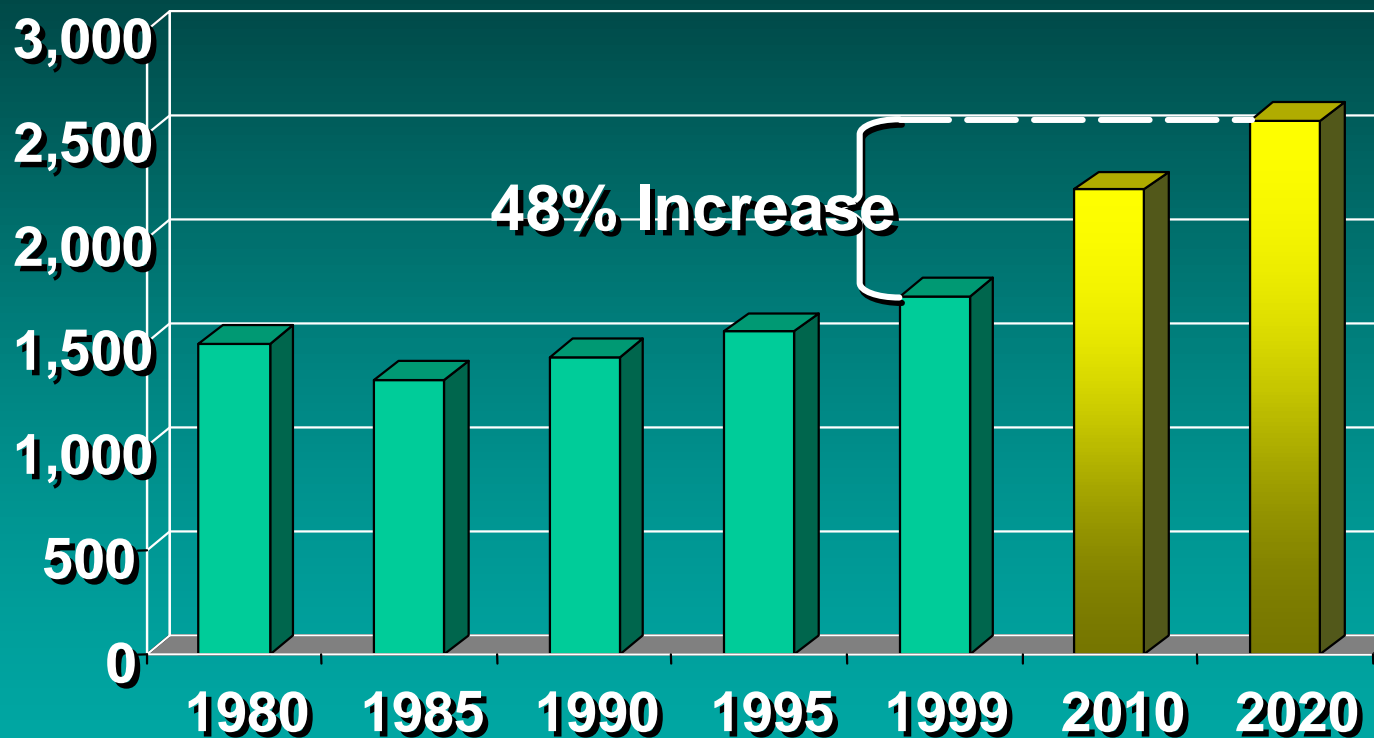


Source: USDOT FHWA Freight Analysis Framework

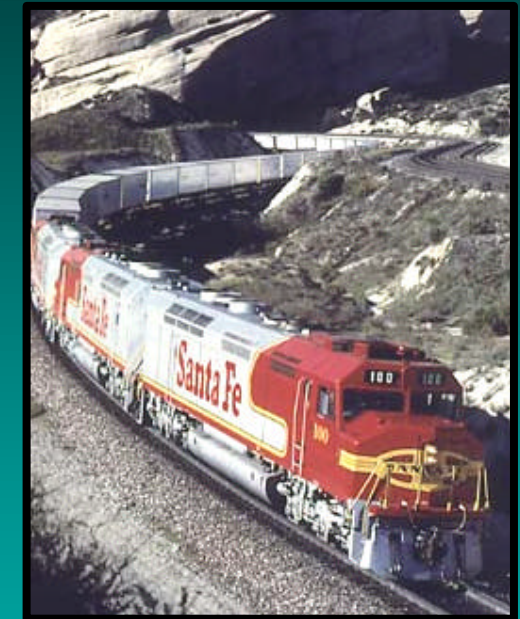




# Forecast of US Rail Traffic (By Origins in Millions of Tons)

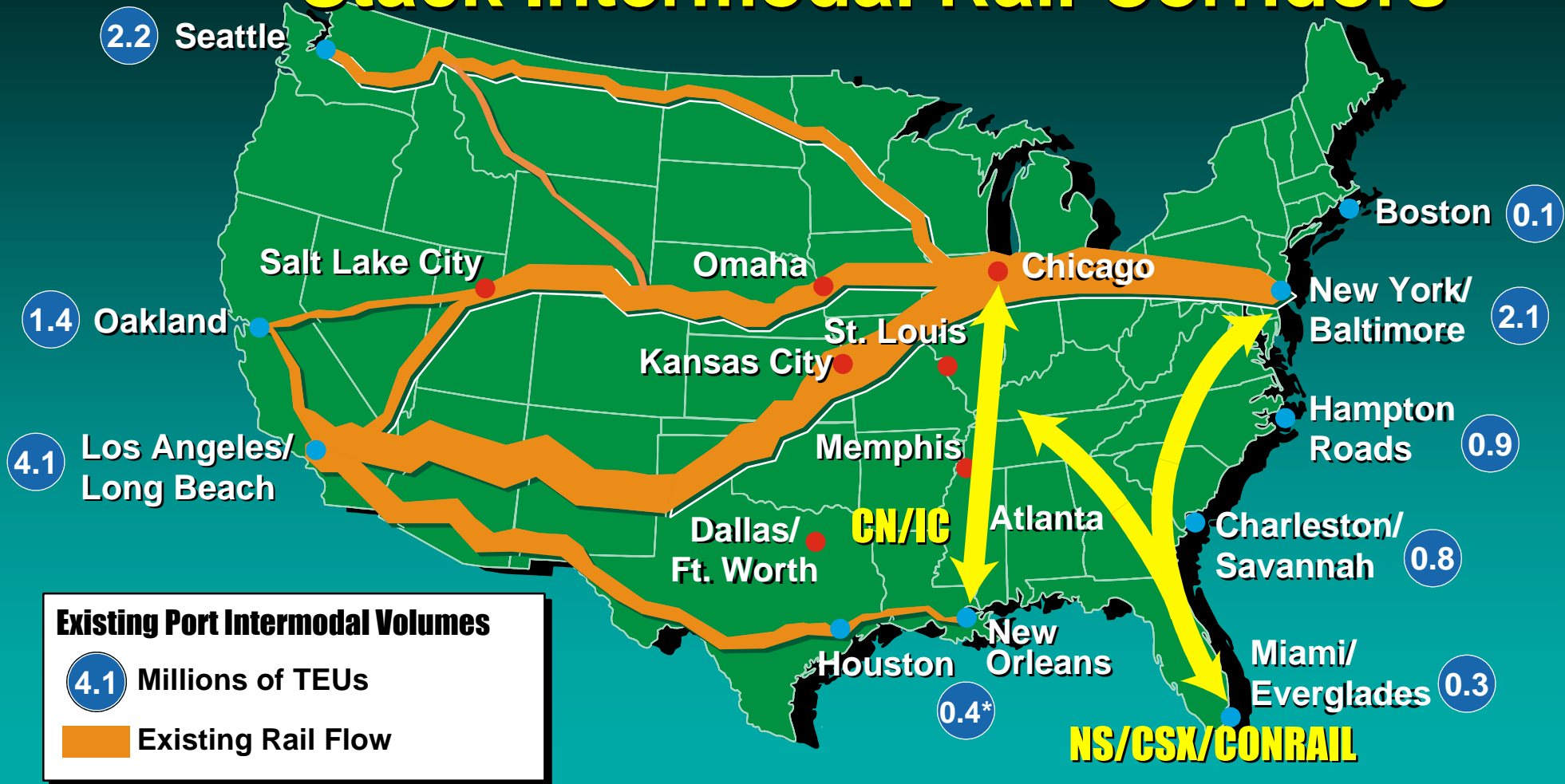


Source: FHWA Multi-Modal Freight Analysis,  
Framework Project using Reebie Associates 1998 data





# Emerging New North-South Double-Stack Intermodal Rail Corridors



\* for the region

Source: Double-Stack Container Systems:  
Implications for U.S. Railroads  
and Ports, U.S. DOT/VZM/TranSystems







# **Can Information Technology (IT) Platforms Solve Port Capacity Shortfalls?**



# 6<sup>th</sup> Marine Transportation System Research and Development Coordination Conference



Where's my cargo?

Americas Systems Inc. develops a port system that allows companies to obtain information on shipments

BY CHRIS DUPIN





6<sup>th</sup> Marine Transportation System Research and Development Coordination Conference

# Marine/Railroad/Trucking IT Portal Networks

(Multi-Carrier Neutral Tracking Platforms)

**now**

Now Solutions, Inc.

The Global Transportation Platform  
**arزون**



# Global Transportation Network (GTN)

**TRANSYSTEMS**  
CORPORATION





# **Port Authority of NY/NJ's “FIRST”**

## **Freight Information Real-time System for Transport**

**American Systems Inc. (ASI)**

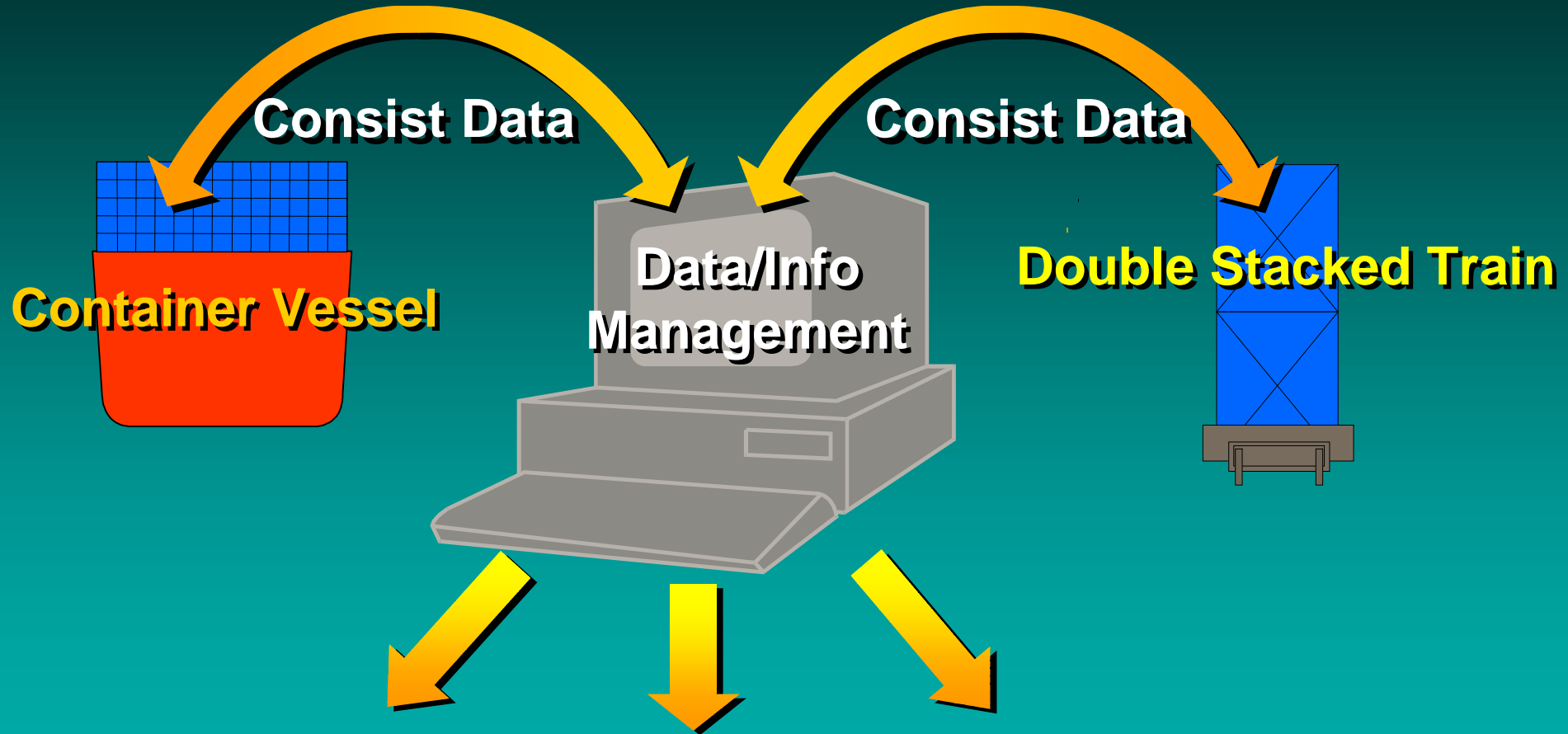
**Real-Time Web-Enabled Information Platform**

**Includes:**

- **Cargo Availability**
- **Individual Container Status**
- **Ship Schedules, Train Schedules**
- **Highway Traffic Conditions**
- **Live Camera Feeds**



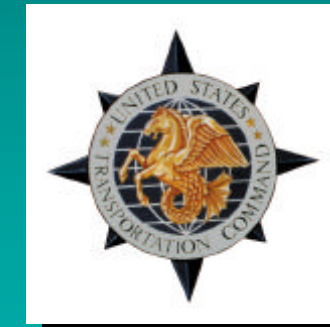
# Multimodal Information Technology Data Integration



## Major Terminal Capacity Benefits



# Agile Port IT Technology Development





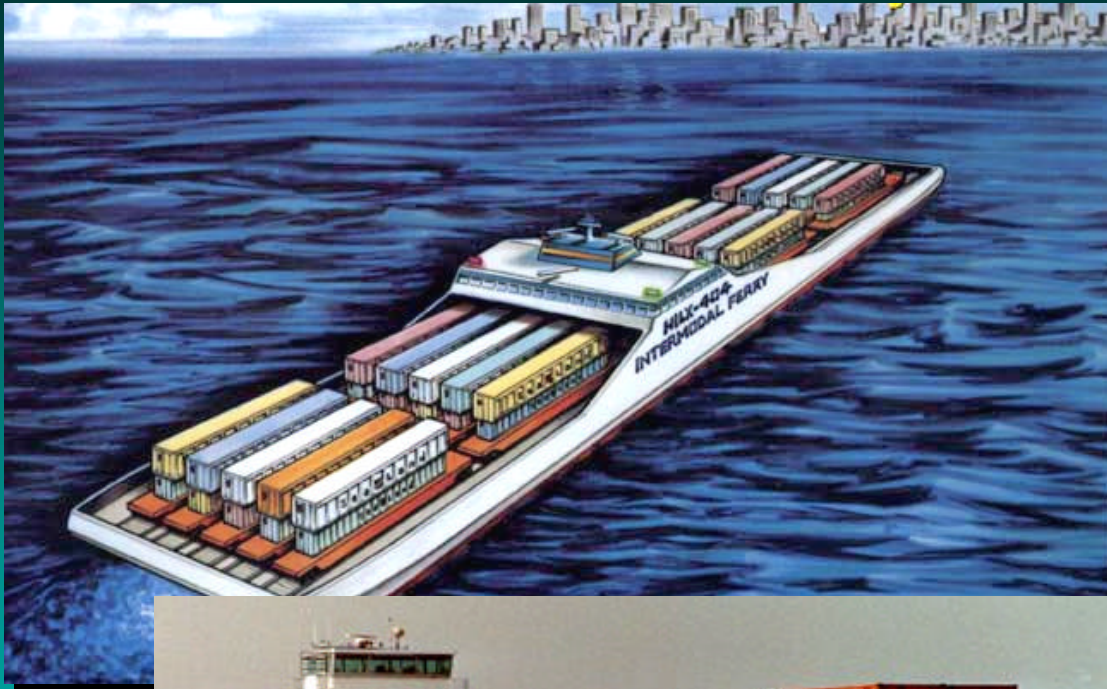
# **Agile Port Information Technology (IT) Benefits**

- **Increased Marine Terminal Productivity  
(Up to 200%)**
- **Increased Marine Terminal Efficiency  
(less equipment needed)**
- **Reduced Marine Terminal Acreage**
- **Truck Traffic Reduction in Port Areas**





# Emerging Viable Feeder Services (Coastwise & Inland Intermodal Barge Service)







**Marine Transportation System  
Research and Technology  
Coordination Conference**

# **MTS Port Capacity Problems: Real or Perceived ?**

**John Vickerman  
Principal  
TranSystems Corporation**